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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,706	03/29/2002	Iouri Kalinitchenko	01-20 US	2717

7590

09/16/2003

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EXAMINER

KALIVODA, CHRISTOPHER M

ART UNIT PAPER NUMBER

2881

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,706

Applicant(s)

KALINITCHENKO, IOURI

Examiner

Christopher M. Kalivoda

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. See page 1, line 14, page 2, and line 25 for examples.

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Australia on April 27, 2001. It is noted, however, that applicant has not filed a certified copy of the PR 4651 application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,939,718 to Yamada, et al. in view of 3,473,020 to Brubaker and further in view of 3,371,204 to Brubaker. Regarding independent claim 1, and dependent claims 3 - 7, 9, 10 and 14, Yamada, et al. teach a mass spectrometer comprising a source for producing particles including ions together with neutral particles and photons (col 6, lines 1-8), an ion optics system in a first vacuum region which receives the particles (col 1, lines 43-46 and Fig 1, ref sign 40), at least one electrode for directing the beam in a first direction (col 1, lines 51-58), a quadrupole mass analyzer in a second vacuum region and an ion detector also in the second vacuum region for receiving ions from the mass analyzer (col 2, lines 1-10 and Fig 1, ref sign 58 and 62).

In operation, the beam passes from an inductively coupled plasma source (abstract, line 1) through a set of quadrupole fringe electrodes that are elongated and curved such that the ions exit the fringe electrodes generally in the same direction as they enter the fringe electrodes whereby the entrance and exit are substantially parallel but not collinear (col 8, lines 16-23 and Fig 12). The fringe electrodes can also be elongated, straight and tilted relative to an entry direction (col 7, lines 65-67, col 8, lines 1-3 and Fig 10/11). Based on the fringe electrode positioning, the electrodes cover and thereby shield the linear quadrupole mass analyzer entrance and detector (Fig 10-12). One skilled in the art will also recognize there are many variations of shape which can be used such as a double curved shape.

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With respect to claims 1, 3, 4, 8 and 11-13 the reference is silent with respect to a second electrode for reflectively diverting the ion beam through various angles whereby neutral particles and photons continue in the first direction and are separated from the beam of ions.

Brubaker (in U.S. Patent 3,473,020) teaches the use of electrodes for reflectively diverting ion beam through an angle whereby photons continue in the first direction and are separated from the beam of ions (col 1, lines 33-40). One skilled in the art will recognize that any neutral particles also continue in the first direction with the photons. In addition, the angles through which the beam is diverted from the first direction can be at least 10 degrees, greater than 10 degrees or about 90 degrees (col 3, lines 1-2).

With respect to claims 1, 2, Yamada, et al is silent with respect to a set of quadrupole fringe electrodes for receiving the beam in a second direction and diverting the ion beam prior to entering the mass analyzer and shielding the mass analyzer entrance.

Brubaker (in U.S. Patent 3,371,204) teaches the use of quadrupole fringe electrodes for receiving a beam prior to entering a mass analyzer (col 5, lines 70-75).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Yamada, et al. to include a second set of

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electrodes for reflectively diverting the ion beam whereby neutral particles and photons continue in the first direction and are separated from the beam of ions. Furthermore, it would also have been obvious to one skilled in the art at the time the invention was made to modify the invention of Yamada, et al. by removing the aperture plate to use the electrodes as fringe field electrodes with the fringe field electrodes diverting the ion passage prior to entering the mass analyzer and shielding the mass analyzer entrance.

The motivation for these modifications would be to attenuate the number of photons and neutral particles reaching the detector to reduce the noise signal at the output of the detector (U.S. Patent 3,473,020 col 1, lines 40-43) and increase resolution, sensitivity or performance of the mass analyzer (U.S. Patent 3,371,204 col 6, lines 1-4).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The three U.S. Patents cited above were also referenced in the specification. In addition, U.S. Patent 3,410, 997 describes curving the trajectory of ions to improve the operating capabilities of a mass filter by reducing the background currents at a detector. WO 00/17909 now U.S. Patent 6,614,021 describes a reflective ion optics system. European Patent Application 0 237 259 A2 describes curving the trajectory but there is no reference to fringe electrodes.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Kalivoda whose telephone number is (703)-305-7443. The examiner can normally be reached on Monday - Friday (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (703)-308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-872-9318 for regular communications and (703)-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

cmk
September 4, 2003


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800